

# Locating the Cargo Terminals in the Province of Kohgiluyeh & Boyer

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**Abstract**— Cargo terminals are as one of the main components of road transport system that by which we can provide services and facilities to the drivers and the fleet of transportation, centralized and coherent, and so we can make policy, conduct, and have necessary control and supervision the system of road transportation.

One of the main problems in the transport sector of kohgiluyeh & Boyer Ahmad's province is wandering trucks for finding and loading of the goods in urban areas that it caused to increase the number of accidents, environmental pollution and noise pollution, and so on. It also undermines the possibility of supervision on their activities. Considering the present situation, organizing the transportation of goods was a necessity, that as cargo terminals localization in the province of Kohgiluyeh & Boyer Ahmad were studied.

Methods used to locate cargo terminals are regional planning techniques including, spatial analyses of land use and traffic flow analysis in the major roads. Geographical Information Systems (GIS) is used to visualize the results clearly. The findings of the above mentioned techniques in totally gave the priority of construction of the cargo terminals to the roads of Yasuj-Babamaidan weighing 40, Yasuj-samirom weighing 36, Dogonbadan-Behbahan weighing 28, Dogonbadan-Babamaidan weighing 27, Dogonbadan-Behbahan weighing 25, and Yasuj-Sepidan weighing 25, respectively.

According to the research findings and the multiplicity of goods transport's companies in the province and the need to construct a terminal in each territory, places suitable for construction of the cargo terminals were selected respectively in Boyer Ahmad territory, the 15-20 km of Yasuj-Babamaidan road, in Gachsaran territory, centered 5 kilometer of Dogonbadan-Behbahan road, and in kohgiluyeh territory, the beginning of Dehdasht-Behbahan road.

**Keywords**— Goods transportation, cargo terminals, locating, GIS, regional planning, spatial analysis, kohgiluyeh & Boyer Ahmad province

## INTRODUCTION

T Road transportation due to its special characteristics, is known as a common mode of transportation in different countries and in our country i.e. Iran. it's as most popular mode for transport goods and passengers. This makes necessary attention to the road transportation system in order to increase efficiency and improve performance of it. Increasing the efficiency of road transportation system requires coordinated development of all its components and subsets including fleet transportation, drivers, road network, road facilities, terminals, etc. [5, 10]. Accordingly proper locating and then construction of cargo terminals as one of the most important components and infrastructures of road transportation is a necessity that through which we can provide services and facilities to the drivers and the fleet of transportation, centralized and coherent, and so by which make policy, conduct and have necessary control and supervision the system of road transportation [2, 6]. In this regard in Kohgiluyeh & boyerahmad province, organizing goods transportation was a

necessity that as locating cargo terminals in Kohgiluyeh & Boyer-Ahmad province has been studied. Selecting an appropriate location for the project is very important. This requires extensive investment in projects that have been more sensitive [7]. In other words, incorrect locating of a project it means non-optimal use of investment and waste of time, manpower, investment and resources and ultimately inefficiency of the project. Since the construction of cargo terminals require large investment amounts and reaching to the expected goals at first degree is subject to its correct location, locating must be performed with high accuracy [8].

## RESEARCH METHODOLOGY

In this study to locate cargo terminals in the province of Kohgiluyeh & Boyer Ahmad we used the techniques of spatial analysis of land use and traffic flow analysis in the major roads that are most commonly used for regional planning [1]. Geographical Information Systems (GIS) is used to visualize the results clearly [3].

### A. Spatial Analysis Of Land Uses At Regional Level

In this method, variables and indicators that could help us to locate cargo terminals in the province of Kohgiluyeh & Boyer Ahmad, analytically were reviewed and analyzed that included: urban and rural centers of excellence (in terms of population growth), major centers of activity (agriculture, industry, mining, services), regional development roads, industrial poles, agricultural poles, and transportation road networks [1].

### B. Traffic Flow Analysis

In this method by surveying the traffic flow (with an emphasis on freight vehicles) on the road network of the province, by electronic devices that were installed in the road surface, can determine the priority of roads for construction of the cargo terminals [4]. In this study the results of the traffic flow for the year of 2009 has been used to analyzing the traffic flows of the roads.

## STUDY AREA

The study area for this research is Kohgiluyeh & Boyer Ahmad province, a relatively small province in the southwest of Iran. Total length of road network of this province including highways, main roads, secondary roads, gravel roads, and other roads (excluding the urban roads) is 2373 kilometer (see figure 1).

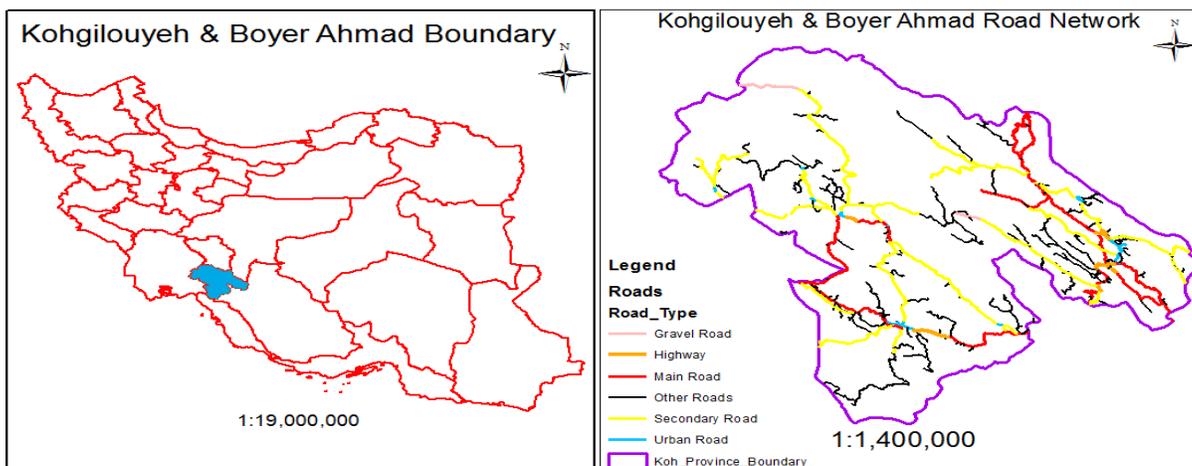


Figure1: Map showing a) Boundary of the study area i.e. Kohgilouyeh & Boyer Ahmad province – Iran, b) Road network of the study area

Maps collected from different sources. Atlas of Iran road network collected from RMTO (Road Maintenance & Transportation Organization of Iran), scanned, Georeferenced, and used as a base map for digitizing the road network. Digitization of roads has done in Google earth based on Iran atlas of road network. Digitized maps are exported to ArcGIS 10.1 and the format is converted to shape file (.shp).

## **RESULTS AND DISCUSSION**

According to the methods used for locating, the use of spatial analysis technique and traffic flow analysis technique, the following results were obtained:

### **A. Spatial Analysis Of The Uses At Regional Level**

#### **Urban And Rural Centers Of Excellence**

From view point of the population growth in urban areas, most growth concentration has been placed in eastern and southern regions of the province, which in the meantime up to 2000 the greatest growth in urban areas occurred in the South, East and so in the provincial capital. Generally the cities Yasuj, Dogonbadan, and Dehdasht have a high potential of population growth. From the view point of population growth in rural areas, most concentration has been placed in the East, North and West of the province [9].

#### **Major Activity Centers**

##### **Agricultural Centers**

Major agricultural areas of the province have been developed in South and West of the Province (crops) and the North and East (garden products) that of which in the south of the province, lishter plain in Gachsaran territory and in the east of province, tourist area of Sisakht(capital of Dena territory) near Yasuj city can be mentioned [9].

##### **Industrial and Manufacturing Centers**

From view point of industrial activities and industrial Estates, the most concentration of industries has placed in south of Yasuj city and in the Yasuj - Babamaidan road. After it the highest concentration of industries have settled in the West of Dogonbadan city and in the Dogonbadan - Behbahan road and after these two, the highest concentration of industries have placed in the West of dehdasht city and in the Dehdasht - Shahreza road (in the continuation of Dehdasht - Behbahan road). Meanwhile, the cement factory of Yasuj with the potential of daily production of 130 thousand tons of cement is located in the south of Yasuj city and in the 20th kilometer of Yasuj - Babamaidan road [12].

##### **Mining Centers**

Major mines in the province have been distributed in the East, South and West of the province. As rubble and limestone mines exist in the East of Boyerahmad territory and gypsum mines exist in the South and West of Province i.e. Gachsaran and kohgilouyeh territories [12].

##### **Services**

In context of Premier services in the province, Yasuj city (provincial capital) and then, Dogonbadan and Dehdasht cities as poles of services and facilities are considered.

### Ways of Development and Transportation

The main ways of development are Yasuj - Babamaidan, Yasuj - Sepidan, Yasuj - Samirom, Dogonbadan - Behbahan and Dehdasht - Behbahan roads that all are important to transportation in the province.

With assigning a weight to each of the above criteria and assigning the maximum weight of 20 for each road, the following results were obtained in relation to the major roads (Table 1).

Table 1: Results for spatial analysis of the uses at regional level

Criteria Road	Urban and rural centers of excellence	Agricultural centers	Industrial centers	Mining centers	Services	Total Weight
Yasuj - Babamaidan	4	4	4	4	4	20
Yasuj - Sepidan	4	3	3	3	4	17
Yasuj - Samirom	4	3	3	4	4	18
Dogonbadan-Babamaidan	2	1	2	1	2	8
Dogonbadan - Behbahan	2	3	2	2	2	11
Dehdasht - Behbahan	3	2	2	4	1	12

### B. Traffic Flow Analysis In The Roads

Evaluation of traffic flow of freight vehicles in the roads of Kohgiluyeh & Boyer Ahmad province in 2009 and assigning a weight to each mentioned criteria in relation to major roads of the network, the following results were obtained [11](Table 2).

Table 2: Results for traffic flow analysis in the roads

Criteria Road	Flow of freight vehicles(vehicle-day)	Weight
Yasuj - Babamaidan	1666	20
Yasuj - Sepidan	655	8
Yasuj - Samirom	1519	18
Dogonbadan - Babamaidan	1530	19
Dogonbadan - Behbahan	1413	17
Dehdasht - Behbahan	893	13

The results are summarized in the traffic flow analysis in the roads and spatial analysis of land use techniques, gave the priority for construction of cargo terminals, respectively, to the Yasuj - Babamaidan, Yasuj - Samirom, Dogonbadan - Behbahan, Dogonbadan - Babamaidan, Dehdasht - Behbahan and Yasuj - Sepidan roads as the results are shown in table 3.

Table 3: Results for spatial analysis of the land use and traffic flow analysis in the roads together

Road	Cumulative Weight
Yasuj - Babamaidan	40
Yasuj - Sepidan	25
Yasuj - Samirom	36
Dogonbadan - Babamaidan	27
Dogonbadan - Behbahan	28
Dehdasht - Behbahan	25

## CONCLUSION

According to the research findings and the multiplicity of goods transport companies in the province and the need to build a terminal in each territory, places suitable for the construction of cargo terminals are proposed as follows. (1) Major population centers, agricultural, industrial and ways of development and transportation, mostly ended to the capitals of territories in the province i.e. Yasuj, Dogonbadan and Dehdasht. So the priority for construction of cargo terminal is leading to this cities. (2) Among the cities mentioned above with regard to all properties described and the share of province's territories of the number of goods transport companies and institutions, the priority for construction of cargo terminal, respectively, are in the roads leading to Yasuj, Dogonbadan and Dehdasht cities. (3) Since the establishment of cargo terminal usually considered near the entrance of cities and industrial centers, agricultural centers, manufacturing centers and the roads with high traffic flow (freight fleet flow), so the site of construction of Yasuj's cargo terminal at 20th kilometer of Yasuj - Babamaidan road (nearby cement factory of Yasuj), the site for construction of Dogonbadan's cargo terminal at 5<sup>th</sup> kilometer of Dogonbadan - Behbahan road (adjacent to chaharbishah's industrial town) and the site for construction of Dehdasht's cargo terminal at the beginning of Dehdasht - Behbahan road are proposed (see figures 2 to 4).

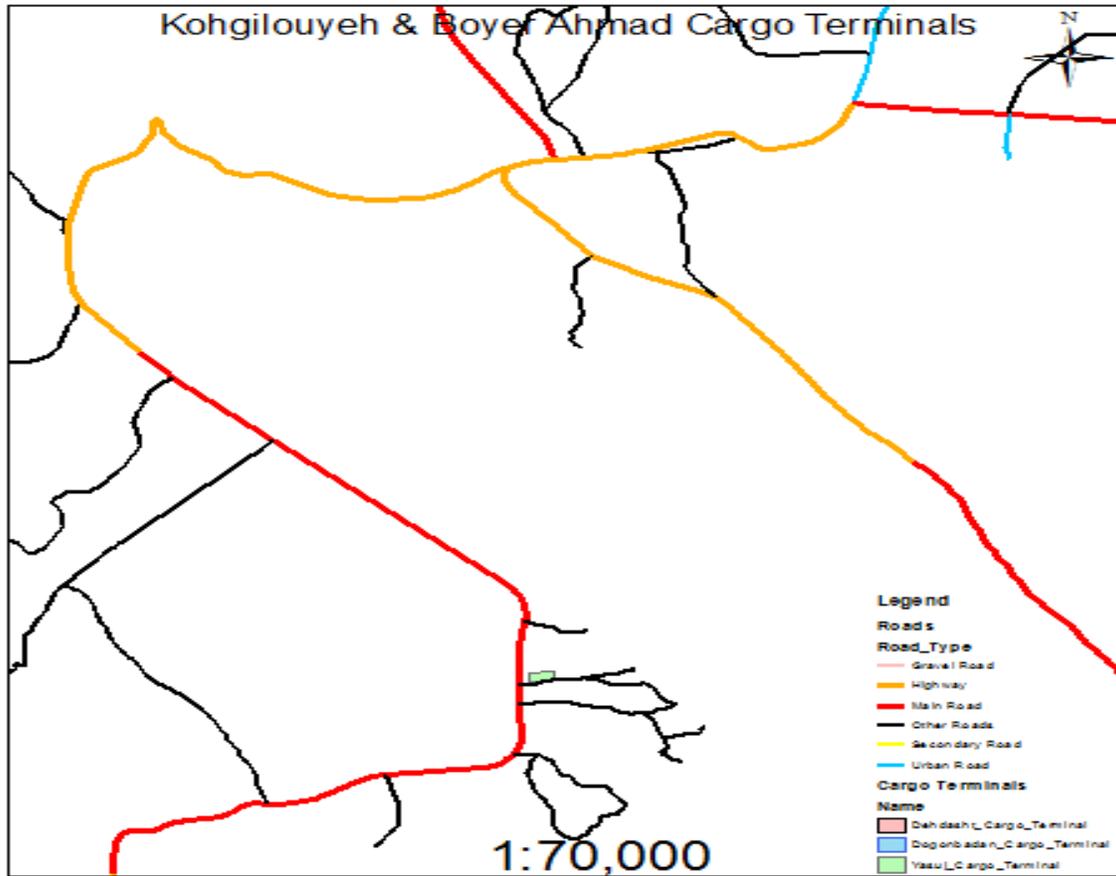


Figure 2: Map showing 1<sup>st</sup> priority for construction of cargo terminals in the study area i.e. Kohgiluyeh & Boyer Ahmad province – Iran

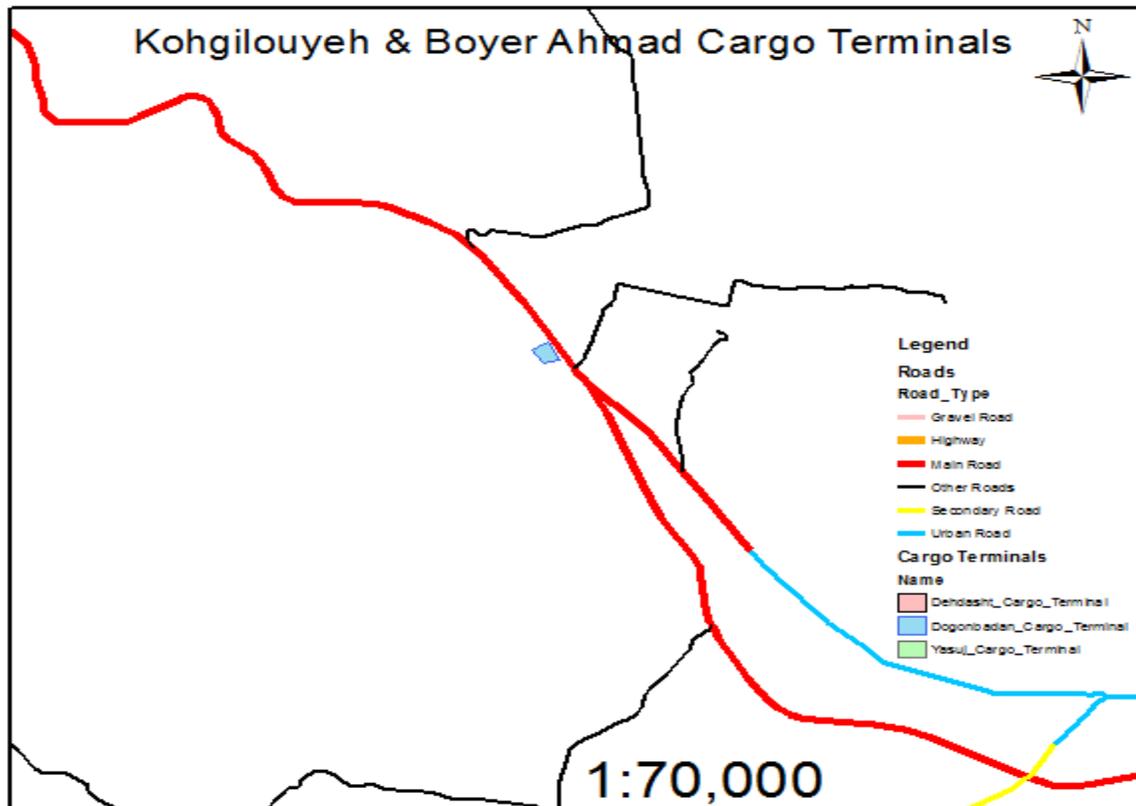


Figure 3: Map showing 2<sup>nd</sup> priority for construction of cargo terminals in the study area i.e. Kohgilouyeh & Boyer Ahmad province – Iran

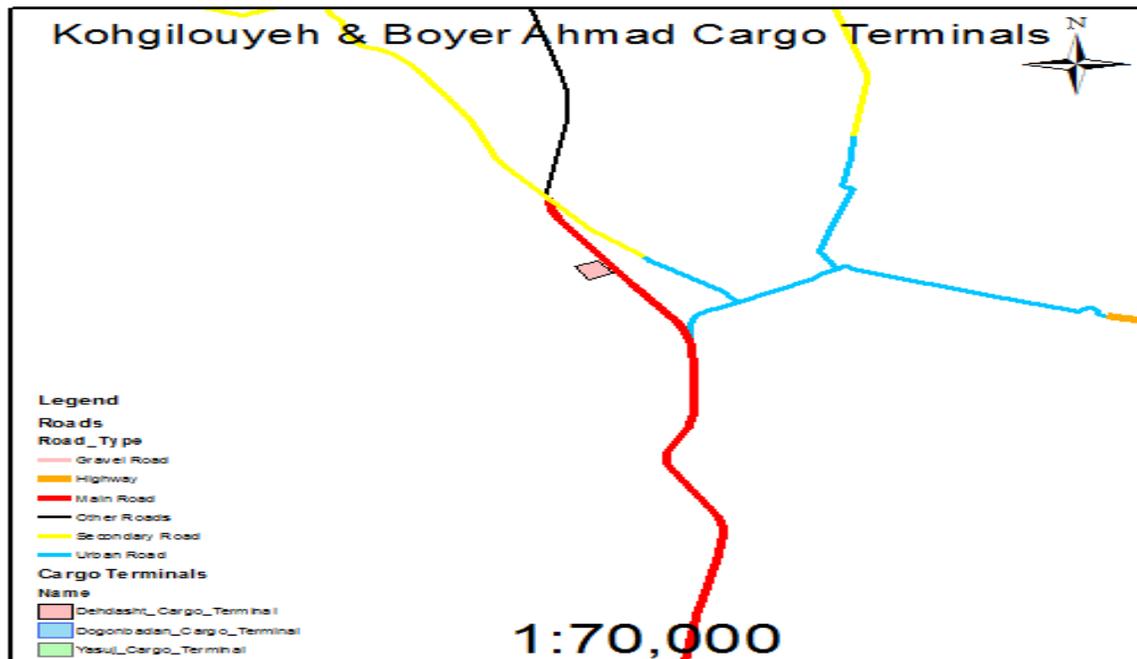


Figure 4: Map showing 3<sup>rd</sup> priority for construction of cargo terminals in the study area i.e. Kohgilouyeh & Boyer Ahmad province – Iran

Construction of cargo terminals at these locations will cause the increment in efficiency of terminal, reduction of waste trade in the urban areas due to find and loading of goods, increment in traffic safety in urban areas and better responsibility to the transportation demand and finally transportation development in the province [3].

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